

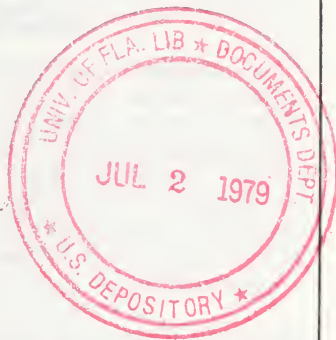
STATUS OF THE FAMILY FARM

*Submitted by the United States Department of Agriculture
in Compliance With Title I, Sec. 102 of the
Food and Agriculture Act of 1977*

COMMITTEE ON AGRICULTURE,
NUTRITION, AND FORESTRY
UNITED STATES SENATE



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(II)

FOREWORD

Over the past 40 years, our agriculture policies have been directed primarily toward maintaining reasonable incomes for the Nation's farmers and supplying American consumers with an abundant supply of high quality food and fiber at reasonable prices.

While some persons have criticized our farm programs for various reasons, we can be proud of the achievements of American agriculture. For example, net farm income is expected to reach a near record high in 1979 of well over \$30 billion; at the same time, consumers will spend less than 17 percent of their disposable income for food—the lowest of any nation in the world.

It is my view that the family farm is the heart and soul of American agriculture and is the primary reason why each of our farmers is able to feed and clothe approximately 75 Americans and together export over \$30 billion worth of agricultural products annually.

The number of farms in this country has declined from 6 million in 1935 to under 3 million today. As the number of farms has declined, farms in general, have become larger in size. There are rising fears that the traditional family farm in America may be marked for extinction and that we may be headed toward a system of agriculture based on giant, corporate-type farms. As a result, the structure of American agriculture is a matter of growing concern.

Congress recognized and shared these concerns as demonstrated in the Food and Agriculture Act of 1977. As stated in section 102(a) of the 1977 act, "the maintenance of the family farm system of agriculture is essential to the social well-being of the Nation and the competitive production of adequate supplies of food and fiber." Under section 102(b) of that act, the Secretary of Agriculture is required to prepare annual reports "in order that Congress may be better informed regarding the status of the family farm system of agriculture in the United States." The report contained in this print is the first report prepared by the Secretary under this legislative mandate.

While the report contains no policy recommendations, it identifies the data needs to address effectively the unanswered questions about the changing structure of American agriculture. For informed public policy judgments, an understanding of the forces affecting farm structure is essential. It is important to know, in fact, that a given public policy—such as a particular commodity program or tax provision—has the consequences on farm structure that are popularly believed.

Because of their sincere concern about the structure of American agriculture, the rapid expansion of large farm units, and the uncertain future of the family farm, many persons question our traditional farm commodity programs. Some believe that these programs have increased the trend toward fewer and larger farm units and, therefore, suggest that a national dialogue be established on this issue.

While such questions go to the heart of our national farm policy and challenge the basis of the programs that have been enacted over the past 40 years, I welcome such a discussion. Such a debate can be a useful and wholesome way to lay the groundwork for the development of the 1981 farm bill. In fact, as chairman of the Committee on Agriculture, Nutrition, and Forestry, I have initiated new studies of farm structure by the best agricultural policy experts in the Nation.

We can and should debate ways that farm price and income protection programs—whether they be commodity loans, target prices, grain reserves, direct purchases, or other measures—can be improved and made more responsive to the needs of farmers operating family-sized units. I believe that improvements can be made without abandoning the program approaches that have proved themselves in the past.

In reality, there probably is a complex set of economic, social, and psychological reasons why the structure of American agriculture is changing. As this Nation's farms have grown larger and fewer in number, farm families have become more dependent on outside sources for their production items, as well as other personal goods and services such as food, clothing, and entertainment. Subsistence farming is all but gone, and farm families have become more like their urban counterparts.

Urban workers often need higher wages to maintain or enhance their standard of living. Farmers have the same problem. They react by expanding the size of their operation—the primary way they can increase their incomes since they have little or no control over prices received for their production.

Many persons associated with government and universities have watched nonfarm small businesses decline in economic importance and lamented it, and now are concerned that the small family farm—probably the most viable small business remaining today—will experience a similar fate.

As a result, there has been a tendency to blame the Federal Government for the growth in farm size. Since little solid data are available on the effects that Government policies have on farm structure, there is a tendency to accept conclusions that are based more on emotion than on fact. Some hold out the hope that a villain can be found so that the situation can be changed with ease, or look for new and inexpensive means to achieve the desired end result.

While I am pleased that many persons will join in the discussion of this issue over the coming months, I hope that the debate on farm policy will not be taken as a signal that this Nation is about to turn its back on programs that—for all their shortcomings and imperfections—have sought to assure the farmer a reasonable income and the consumer an abundant and reasonably priced supply of food and fiber. The first annual report of the Secretary of Agriculture on the family farm outlines the big job ahead for all of us who are interested in the continued success of American agriculture, and I look forward to the challenge.

HERMAN E. TALMADGE, *Chairman.*

LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D.C., September 20, 1978.

HON. HERMAN E. TALMADGE,
*Chairman, Committee on Agriculture, Nutrition, and Forestry, U.S.
Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: Enclosed is a copy of the first report on the Status of the Family Farm in the United States as required by the 1977 Food and Agriculture Act (title I, sec. 102). The request by Congress for this report recognizes one of the most critical issues which face agriculture policymakers today: how to ensure that our programs and policies lead both to the continuation of our efficiency in food production and to the strengthening of the family farm structure.

The report findings are based primarily on research initiated before the 1977 Food and Agriculture Act. Therefore, in many cases on the data available it was not possible to answer fully the questions which I feel we must answer on this important topic. We have initiated new research, which, as it becomes available, will be included in special reports, as well as in future annual family farm reports to the Congress.

We are attempting, through this series of special research projects, to provide a total picture of the structure of agriculture to the Congress and to other policymakers, so that we may have a solid analytic base upon which to undertake specific corrections in program operations, to propose amendments to current legislation, and new legislation where necessary to further enhance and protect the family farm system. It was not possible to do all of this for the first report. However, the report is a concise review of the current farm structure, with some conclusions upon which to base further investigation. I hope you will find it of use.

Sincerely,

BOB BERGLAND,
Secretary.

ACKNOWLEDGEMENTS

This report was prepared in the Economics, Statistics, and Cooperatives Service (ESCS), U.S. Department of Agriculture. While the final report reflects input and assistance from many people, the report was prepared primarily by and under the direction of Donn A. Reimund, ESCS. This report draws heavily from a long report prepared for ESCS under contract by Dr. Luther Tweeten, regents professor, Department of Agricultural Economics, Oklahoma State University. Special appreciation is also due to Susan Sechler, Office of the Secretary, for her assistance in designing, reviewing and editing the report.

CONTENTS

	Page
Foreword.....	III
Letter of transmittal.....	V
Status of the family farm:	
Introduction, conclusions, and research recommendations.....	1
Family farm definition.....	2
Inadequate data.....	3
Conclusions.....	3
Research agenda.....	6
Trends in the farming sector.....	9
Number and size characteristics of farms.....	9
Farm output.....	10
Farm income.....	11
Assets in the farming sector.....	12
Returns to equity in farming sector.....	16
Tenure.....	17
The farm labor force.....	17
Form of business organization.....	18
Vertical coordination.....	20
Forces affecting the structure of farming.....	23
Technological economies of size.....	23
Pecuniary and market economies.....	24
Land price increases.....	24
Impacts of inflation on the farming sector.....	26
Farm prices.....	27
Impact of risk and instability.....	28
Credit institutions.....	29
Tax policies.....	29
Environmental and other regulations.....	30
Structural impacts of farm commodity programs.....	30
Public research, education, and technical assistance programs.....	32



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STATUS OF THE FAMILY FARM

INTRODUCTION, CONCLUSIONS, AND RESEARCH RECOMMENDATIONS

The Food and Agriculture Act of 1977 directs the Secretary of Agriculture to submit to the Congress annually: "... a written report containing current information on trends in family farm operations and comprehensive national and State-by-State data on nonfamily farm operations in the United States. The Secretary shall also include in each such report (1) information on how existing agricultural and agriculture-related programs are being administered to enhance and strengthen the family farm system of agriculture in the United States, (2) an assessment of how Federal laws may encourage the growth of nonfamily farm operations, and (3) such other information as the Secretary deems appropriate or determines would aid Congress in protecting, preserving, and strengthening the family farm system of agriculture in the United States" (title I, section 102).

This request reflects the concern of the Congress about: (1) the importance of the structure of American agriculture in assuring continued supplies of food and fiber at reasonable prices; (2) the need to maintain a viable farming sector that provides opportunities for a large number of individuals and families having considerable management independence and freedom; and (3) changes in the structure and organization of U.S. agriculture resulting from complex interactions of economic, technological, social, and political forces. These include Federal farm policies and programs that may be affecting the farm sector in ways not intended by the Congress or by the executive branch.

To assure that the Department is able to address these issues and concerns, we are initiating new research. It will focus on better describing the present organization structure, and performance of the farming sector and directions of change; and better understanding and explaining the forces causing change, the implications of alternatives to the changes taking place, and the attendant public policy issues.

Without prejudging the findings of further research, this initial report puts the structural change and "family farm" issues into perspective, provides tentative insights into the forces causing change, and identifies research and data needed to deal effectively with policy issues likely to emerge.

The first section examines trends in farm size, output, and income (farm and off-farm). It examines trends in the financial structure and organization of the farm sector including land tenure and prices, farm financing, assets, returns on equity, and debt. It also attempts to measure other dimensions of structural change, such as trends in the

number of corporations involved in farming, vertical integration, changes in labor requirements, and the ability of young persons to enter farming.

The second section examines the major forces behind changes in the structure of farming. These include economic and market forces, technological forces, institutional changes, and farm policies and programs.

FAMILY FARM DEFINITION

We faced two critical limitations in preparing this report. First, there is no common meaning or operational definition of a "family farm" completely satisfactory for policy purposes. The term means many things to many people. No one definition serves all analytical purposes and every definition has its shortcomings.

A common view of a family farm is one operated by a farmer and his family where the farmer provides much of the labor needed for the farming operation, makes most of the management decisions, assumes most of the risk, and reaps the gains or losses from those decisions.

Some people attempt to delineate family farms in terms of size. But any size delineation is arbitrary. For example, most small farms with sales of \$5,000 to \$20,000 are operated by individuals or families. However, many large farms with annual sales of \$100,000 or more are also operated by individuals and families who make the management decisions and provide much of the farm labor.

At the upper end of the size scale, it is difficult to identify a single cutoff point for family farms. Some farms as small as \$100,000 in sales are completely owned and operated by nonfarm corporations. Conversely, some with sales in excess of \$1 million meet the popular criteria for a family farm, and indeed these farmers and their families consider themselves family farmers.

The form of business organization alone is not a particularly useful guide to defining a family farm. Many family farms are incorporated for tax purposes and other business reasons or operated as partnerships.

Neither is ownership a useful test of a family farm. Many farm operators choose, for various reasons, to rent or lease land from others for part or all of their farm operations. Others see land rental as a way to get started in farming and as a step toward eventual ownership. Furthermore, much of the land rented to farm operators is owned by retired farmers or surviving spouses and other family members.

Some analysts have used proportion of labor provided by the farm operator and family as a criterion for defining family farms. According to the most frequently used assumption, a family farm is one that hires no more than 1.5 man-years of labor per year. This is an awkward definition. Labor requirements vary greatly by type of farm. A very large wheat farm in the Northern Plains can be operated with very little hired labor; a relatively small truck crop farm could require a substantial amount of hired labor in peak seasons.

Finally, some suggest that a family farm be one on which the operator and family depend primarily on farming for a living. While it may be useful for policy purposes to know how many families depend primarily on farming for a living, this definition also has severe limitations. If a farmer devotes most of his time to the farm but his wife works off the farm and nets more income than he does, is the farm any less a

family farm? If a farm family invests its farm earnings in nonfarm stock or other investments which eventually earn more money than the farm operation, is it no longer a family farm?

In summary, *no single definition of a "family farm" is completely satisfactory for all purposes.* Nevertheless, it is useful in understanding the farm sector to have a perspective on the mix of farms and current trends by value of sales, type of organization, sources of income, forms of vertical coordination, degree of concentration, and other criteria. We have attempted to provide such information in this report while initiating research to explore the more complex questions.

INADEQUATE DATA

Inadequate data is the second problem we faced in preparing this report. Without reliable and timely data, it is difficult to advise policymakers on the most pressing issues concerning the structure of agriculture.

Neither the existing data base nor research to date is adequate to explain the developments taking place in the farm sector, the situation of farms in the various size groups, or the individual and cumulative impacts of all the forces causing structural changes. Improvements in the data base and our knowledge of structural changes are essential to understanding the impacts of present Federal policies and programs and the development of rational policies that will facilitate the kind of structure in the farming sector that best serves the Nation.

Even the limited data we have on corporate farms, for example, do not really distinguish between those that are family owned and those managed by very large corporations. Further, there is no way to identify farms operated by hired managers.

Current data do not reveal characteristics of farmers or farm people having low or high total personal income, statistics essential for gauging the economic well-being of farmers. Data on nonfarm ownership of farmland do not reveal the characteristics of these owners, retired farmers, corporations, banks, etc. Collected, but not yet available from the census, is a tabulation of the numbers and characteristics of farms hiring more than 1.5 person years of labor.

CONCLUSIONS

Aggregate farm statistics mask a wide variety of situations and needs in the U.S. farm sector. Viewed in a more disaggregated fashion, a clearer indication of the heterogeneity and multiplicity of the problems becomes evident. To illustrate, at the risk of oversimplification, we grouped farms into three sizes: large farms (over \$100,000 sales), moderate size farms (\$20,000 to \$100,000 sales), and small farms (under \$20,000 sales). Even in the largest group, "family farms" predominate, although some are incorporated. But the income and resource needs differ among the groups, suggesting that public policies developed for the sector as a whole may not be fully and effectively meeting some of these needs.

To generalize, farms in the larger group do not have a persistent low-income problem. By and large, their incomes are substantial, especially when combined with nonfarm income and capital gains.

Furthermore, rates of return on their investments are competitive with those in the nonfarm economy. These larger farms are not without problems, however. They tend to be more highly leveraged in terms of debt and thus more vulnerable to price instability and the resultant fluctuation in cash flow. Thus, this group, the 6 percent of our farms which produce over half of the farm products, have more stake in price stabilization policies than in income support policies.

The second group, the moderate size farms, has a greater stake in income stabilization (deficiency payments and target prices) and price enhancing aspects of farm programs. These farms depend heavily on farm income and are in a competitive struggle with larger farms.

Small farms are the most numerous (70 percent of total), but account for only a tenth of total farm sales. As a group, operators and families on these farms receive considerably more income from nonfarm than from farm sources. But this group includes a large proportion of retired, part time, hobby, and other farmers who have adequate or greater incomes from other sources. It also includes a significant number of persons who live in or near poverty. Data now available do not permit delineating those pursuing farming with the intent of doing so as a primary livelihood.

Available data and studies show there are relatively few larger-than-family corporation farms. They produce a still small but significant proportion of total farm product, and tend to be concentrated (and thus have a relatively greater impact) in certain specialized commodities and in California, Texas, and Florida.

The single most important source of growth in farm sizes has not been corporate takeovers, but consolidation of additional land into *existing farms*. This has led to the concern being voiced that the single greatest threat to the "family farm" is other "family farms." In recent years approximately three-fifths of the land changing ownership has been added to the existing, predominately family farms.

There are several incentives for consolidation and farm enlargement. First, certain production efficiencies and economies accrue to increasing size. Most of such economies are achieved with a size of operation that can be operated with one person's labor, plus some additional seasonal labor, plus a modern complement of equipment and technology. The actual size at which these economies are realized varies greatly by type of crop or livestock produced, by geographic region, and by the technology used. Beyond this, further incentives for growth stem from pecuniary economies—economies of buying, selling, tax benefits, improved access to capital, and simply the desire for more net income.

There are new entrants to agriculture each year. They too reflect the overall trends. Data, primarily from lending institutions, show today's new entrants have access to substantial amounts of debt capital, earn substantial off-farm income, and start with larger than average operations. One explanation is that they have a choice of occupational alternatives. Those that choose to enter farming do so only if they have the management ability and access to the capital required to support an operation large enough to provide them an income (or a combined financial attraction) competitive with their nonfarm opportunities. The traditional "farm ladder"—starting as a hired farm worker, then tenant farmer, then a small owner-operator—is no longer a major route for new entrants. Moreover, the large

capital requirements for getting started in farming means that new entrants or their families tend to be wealthier than the average person or family. Thus, the market selection process for new entrants abets the trends to fewer and larger farms.

For the farm sector as a whole, over time, there has not been a shortage of capital or credit. Stabilization and risk minimization provisions of farm programs have induced competitive capital flows from commercial lending institutions. In addition, the Farm Credit System and the Farmers Home Administration tap the general money markets and lend to farmers exclusively. The aggregate ratio of debts to assets has not increased greatly and is below that for many other economic sectors. However, the aggregate data can mask the problems of individual farmers in obtaining credit. These problems are particularly acute among low resource, smaller farmers.

As farming continues to become increasingly capital intensive, many farmers rely less on internal financing (saving and depreciation) and more on lending institutions, depend more on purchased inputs, are heavily in debt, and have high debt-to-income ratios. Thus, they are more vulnerable to cash flow problems when farm product prices fall. Furthermore, in general, the larger the farm and the newer the farmer to farming, the higher the relative level of debt financing and the greater the vulnerability to unstable (especially lower) prices and the resultant cash flow problems. Thus, many of the farmers who had serious cash flow problems because of low grain prices in late 1977 and early 1978 have, over the past 5 years, nevertheless accrued farm and nonfarm incomes (plus capital gains) for a total financial well-being considerably above average nonfarm incomes. However, they must overcome each occurrence of the cash flow problem or be forced to liquidate assets and cease or reduce farming operations.

Farmers, and the structure of the farm sector, are increasingly affected by developments in the general economy. In addition to the obvious impacts of developments in money markets, the farm sector is very significantly affected by inflation and fiscal policies. Inflation affects income and wealth redistribution by, on the one hand, intensifying the cost/price squeeze for farm operators (when prices of things farmers buy rise faster than the prices of things they sell), while on the other hand, inflating the value of land, thereby increasing the wealth of landowners and landlords relative to tenants. The comprehensive impacts of inflation on structure are not known but likely increase the difficulty of entry and speed the process of consolidation by present owners, especially larger ones, who can use the new wealth created by inflation to purchase additional land.

Land price inflation also creates problems with intergenerational transfers. Present provisions of inheritance tax laws, combined with the capital gains tax structure, may serve as a disincentive to sell land. This poses the potential, if unchecked, for the eventual emergence of a "landed class" with attendant implications for tenure arrangements and the distribution of benefits (especially those that tend to get capitalized into asset values) from farm price and income policies.

There is also a structural impact from fluctuations in the general economy. A strong economy with low levels of unemployment offers small farmers a chance to supplement farm income with nonfarm income. At the same time, alternative job opportunities induce many

small farmers to quit farming altogether and discourage potential new entrants.

The cumulative and longer run impacts of present farm commodity programs on family farms versus the very large farms and on the structure of the entire farming sector are not well known. While some provisions of the 1977 farm act, such as payment limitations and the special wheat, hay, and grazing allowances, tilt benefits to smaller and moderate size farms, other provisions such as the specifications for cost of production estimates used in setting target prices could have structural impacts *not* intended by the Congress. But more study is needed of the specifics of farm commodity programs and their likely net impacts.

A broad array of programs and policies affect the structure and productivity of agriculture. These include commodity programs, resource policies, food policies, environmental policies, international policies, and monetary and fiscal policies. While some are directed specifically to agriculture, the impacts of others are incidental or indirect. None of the programs and policies that affect the agricultural sector operate independently of other programs and policies. This interdependency may cause specific programs not to achieve their intended objectives, or to impair the effectiveness of other programs. The structure, productivity, and well-being of the farm sector is not determined by any one program or policy, but rather by the cumulative effect of many programs and policies interacting with technological, market, and natural forces.

RESEARCH AGENDA

To address the concerns reflected in title I, sec. 102, of the 1977 act, a number of research projects which will contribute directly to improved understanding of changes occurring in the structure of the farming sector must be undertaken. Several other research efforts, initiated by other purposes, should also yield data and insight relevant to farm structure issues. As results of these studies become available they will be included in special reports as well as in future annual family farm reports to the Congress.

The proposed "family farm" research agenda includes, but is not limited to, study of the following topics:

Direct and indirect impacts of past and current farm commodity programs and policies on the structure and organization of the farm sector. This includes near-term and long-term structural impacts of price and income support programs, payment limitations, grain reserves, economic and natural disaster insurance and credit programs, alternative means of determining price and income support prices, and the current plantings concept versus acreage allotments. The research issue, at least in part, is whether ultimately the benefits and impacts of such programs are consistent with the intentions.

Impact of tax policies on structure and organization of the farm sector. Specifically, how do Federal tax policies affect investment patterns and capital structure, entry of nonfarm and foreign investors into the farm sector, the competitive position of large versus small farms, intergenerational transfer of farm assets, and the resulting implications for continuity of family farming operations, concentration of land ownership, and means of obtaining access to land services by new or young farmers.

Reexamine concepts and update studies of economies of farm size. Includes economies resulting from efficient use of existing technologies and resources available to individual farmers. Also, includes economies of buying and selling related to size, and the extent to which size is related to market access, access to capital and credit, and quality of management. Also, addresses the roles of alternative institutions such as cooperatives for providing small farmers access to many of the economies available to larger farmers.

Closely related to the study of economies of size is evaluation of impacts of present and emerging technology on the structure of agriculture and the competitive position of small versus large farmers. The potential for refocusing technological development to improve the efficiency and competitive position of small and moderate size farms must be evaluated.

Factors affecting the changing financial and capital structure of agriculture and what these changes mean for the structure and organization of the farm sector. Includes the impacts of credit institutions including public and quasi-public credit institutions and Federal farm credit policies.

Impacts of present and alternative regulatory policies and programs on economies of size in farming and on the competitive position of various sizes and types of farms. Includes studies of regulations relating to environmental quality, pesticides, health and safety, food quality and safety, and grades and standards. Research will address the individual as well as the cumulative effects of regulations on farm business organizations, economies of size, and location of production.

Short-term and long-term impacts of inflation on the structure and organization of agriculture. Research will address how inflation affects the competitive position of agriculture and various groups within agriculture over the long run. Attention will be given to the distribution of benefits and losses as well as structural impacts from inflation.

Factors affecting land prices and the influence, in turn, of land price inflation on the structure of the farm sector and the future on the family farm.

Implications of trends toward separation of use and ownership of land and other farming resources. Includes forces leading to specialization in ownership of land and other capital assets by some and specialization in the use of services of those assets to farm by others. Also includes study of how such developments affect tenure and size structure in the farm sector.

Implications of transportation policies and developments for the location of agricultural production and storage and the competitive position of various types and sizes of farming.

Impacts of farm size regulations on Federal irrigation projects. How do alternative farm size regulations bear on efficiency of production, economic health of the farm sector and the closely related economic infrastructure, employment opportunities, and the economic health and viability of rural communities?

Special small farm studies are being considered: characteristics of small farm operator families, particularly those in need of public assistance to improve their well-being; analysis of conditions under which rural industrialization, technical assistance, public sector

employment, et cetera, would be most effective in helping small farmers improve their economic well-being; and improvement in cooperative development programs to assist small farmers.

Long-run effects of public research and education programs in agriculture.

The ownership of farmland factors affecting patterns of ownership, and the impacts of alternative ownership patterns on characteristics of family farms, opportunities for entry and exit, forms of tenure, and the structure and organization of the farm sector.

Impacts of alternative policies and developments affecting energy use and cost.

Special analyses of corporate farms, partnerships, and contract farming from data provided by followup surveys to the 1974 Census of Agriculture.

Analyses of market imposed determinants of farm structure, organization and size. Includes the impacts of input and product market requirements for volume, quality, and regularity of product flows on farm size and organization; and studies of the comparative costs, efficiencies and performance of closely coordinated industrialized farming operations versus traditional independent farming operations.

This research agenda represents those studies that should be undertaken to provide the needed information on this issue. Realistically, not all can be undertaken at one time. However, to avoid fragmentation, we will make a special effort to see that the various projects undertaken in the Department are coordinated, cumulative, and when completed provide greater insight into the overall problem. Additionally, we will make an effort to cooperate with other organizations in the conduct of this research to avoid duplication and to gain greater understanding.

TRENDS IN THE FARMING SECTOR

NUMBER AND SIZE CHARACTERISTICS OF FARMS

There were 6.8 million farms in 1935. The number has declined steadily ever since—to 5.6 million in 1950, then to 2.7 million in 1977. In this decade, the rate of decrease has slowed from 2 percent to just over 1 percent per year.

The land area in farms has also decreased, but at a much lower rate. Thus, there has been a rapid increase in the average size of the remaining farms.

CHARACTERISTICS OF U.S. FARMS

Year:	Number of farms	Land in farms (in millions of acres)	Average size (acres per farm)
1950.....	5,648,000	1,202	213
1960.....	3,963,000	1,176	297
1970.....	2,949,000	1,102	374
1976.....	2,738,000	1,078	394
1977.....	2,705,000	1,075	397
1978 ¹	2,680,000	1,072	400

¹ Preliminary.

Average size, reflecting the variation in types of farming, varies among regions of the country.

REGIONAL AVERAGE FARM SIZES AND SALES, 1974

Region	Average size (acres)	Average value of products sold (dollars)
New England.....	206	44,200
Middle Atlantic.....	178	31,295
East North Central.....	202	30,099
West North Central.....	477	40,113
South Atlantic.....	206	28,773
East South Central.....	175	14,825
West South Central.....	582	31,427
Mountain.....	2,262	60,964
Pacific.....	567	84,148

Source: 1974 Census of Agriculture.

Another commonly used measure of farm size, cash receipts, also reflects increases in farm size. Average cash receipts per farm increased from \$8,882 in 1960 to \$36,752 in 1977. In constant (1967) dollars, the growth rate was less (\$9,349 in 1960 to \$20,083 in 1977), though still substantial.

Size distribution.—Measured by value of sales, farms with sales of \$40,000 and over are increasing, while those with sales below \$40,000 declined from 1970 to 1977. Farm sizes measured by sales average largest in the Pacific Region (\$84,148 in 1974).

FARM NUMBERS, BY SALES CLASS, 1970-77

	Sales (in thousands)								Total farms
	\$100 (and over)		\$40 to \$100		\$20 to \$40		Less than \$20		
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Year:									
1970-----	57	1.9	178	6.1	326	11.1	2,398	80.9	2,949
1971-----	63	2.2	187	6.4	322	11.1	2,330	80.3	2,902
1972-----	82	2.8	217	7.6	321	11.2	2,240	78.4	2,860
1972-----	137	4.8	311	11.0	3-9	11.7	2,046	72.5	2,823
1974-----	150	5.4	331	11.8	328	11.7	1,986	71.1	2,795
1975-----	140	5.1	314	11.3	323	11.7	1,990	71.9	2,767
1976-----	157	5.7	341	12.5	323	11.8	1,917	70.0	2,738
1977-----	162	6.0	348	12.9	321	11.9	1,875	69.2	2,706

The problem in using sales as a measure of size is inflation; sales may overstate the apparent increase in the number of larger farms.¹

FARM OUTPUT

Cash receipts from farming increased 180 percent from 1960 to 1977. In real terms (1967 dollars), the increase was only 47 percent.

CASH RECEIPTS FROM FARMING

[In millions of dollars]

Year:	Cash receipts	
	Nominal dollars	Real (1967) dollars
1960-----	35.2	37.0
1970-----	54.8	49.8
1972-----	65.8	52.6
1973-----	90.5	50.5
1974-----	94.0	49.0
1975-----	90.2	48.8
1976-----	96.6	51.9
1977-----	99.5	54.4

Total farm cash receipts are becoming increasingly concentrated on large farms. In 1960, 0.6 percent (23,000 farms with sales of over \$100,000) of the farms accounted for 17 percent of farm receipts. By 1977, 6 percent (162,000 farms with sales of over \$100,000) of all farms accounted for 53 percent of farm receipts. Farms with sales of \$20,000 to \$100,000, 25 percent (669,000) of the farms in 1977, received 37 percent of sales receipts. The largest change took place in the sales category of \$20,000 or less: In 1960, they numbered 91 percent of the farms and accounted for 49 percent of farm receipts; in 1977, they were 96 percent of all farms but accounted for only 11 percent of farm receipts.

Inflation also distorts these data, overstating the increase in concentration. Concentration ratios (percentage of sales controlled by a given number of farms), not influenced by inflation, show the largest

¹ A recent study concluded that 60 percent of the apparent increase in the number of farms between 1969 and 1974 with sales of \$100,000 and over was due to inflation. William W. Lin and Peter M. Emerson, "Price Inflation and Changes in Farm Numbers by Economic Class" (mimeo), Washington, D.C.; National Economic Analysis Division, ESOS, USDA, 1977.

50,000 farms having 23 percent of the receipts in 1960 and 36 percent by 1977.

Livestock and poultry production is more concentrated than crop production. In 1969, farms with sales of \$100,000 and over accounted for 29 percent of crop sales, but 38 percent of livestock and poultry sales from all farms with sales of \$2,500 or more. In 1974, farms in this sales class had 51 percent of the crop and 57 percent of the livestock and poultry sales.

MEASURES OF CONCENTRATION OF FARM RECEIPTS—SELECTED YEARS

[Percent of farm receipts]

	Sales class (thousands)			Concentration of receipts		
	\$100 and over	\$20 to \$100	Less than \$20	Largest 50,000 farms	Largest 200,000 farms	Largest 1,000,000 farms
Year:						
1960.....	17.3	34.0	48.7	23	40	77
1967.....	28.1	40.1	31.7	30	50	85
1970.....	33.4	41.6	25.0	NA	NA	NA
1977.....	52.6	36.7	10.7	36	63	93

PROPORTION OF FARMS AND SALES BY COMMODITY, 1969 AND 1974

Commodity	Percent of commercial farms producing commodity with sales of \$100,000 and over		Percent of commodity sales from farms with sales of \$100,000 and over	
	1969	1974	1969	1974
Crops.....	NA	NA	29.1	51.4
Grain.....	2.6	10.3	13.0	42.0
Tobacco.....	.8	3.3	8.8	20.2
Cotton.....	3.9	17.1	32.8	67.3
Fieldseeds, forage, and silage.....	2.4	8.2	21.1	39.9
Other field crops.....	6.4	24.3	51.1	81.9
Vegetables.....	7.3	17.4	67.9	82.0
Fruits.....	6.1	12.7	48.4	65.0
Nursery and greenhouse.....	13.0	17.0	70.1	78.2
Livestock and poultry.....	NA	NA	37.6	57.2
Poultry and poultry products.....	5.8	16.4	54.3	79.3
Dairy products.....	1.8	8.3	16.4	36.1
Dairy cattle and calves.....	1.9	-----	15.5	-----
Other cattle and calves.....	3.1	18.5	50.7	165.0
Hogs, sheep, goats.....	2.5	9.5	15.4	37.9
Other livestock and products.....	4.4	7.9	30.7	54.3
All agricultural products.....	3.0	9.0	34.4	54.2

¹ 1974 Census of Agriculture combined all cattle and calf numbers.

Source: 1969 and 1974 Census of Agriculture.

FARM INCOME

Net farm income for all farms increased 42 percent, from \$14.1 billion to \$20.1 billion, from 1970 to 1977, with a record high of nearly \$30 billion in 1973. Over time, the aggregate increase has accrued to fewer and fewer claimants. Net income is also increasingly concentrated among the larger farms. In 1960, 6 percent of net farm income accrued to the largest farms. Mid-size farms received 28 percent and the smallest farms 67 percent.

By 1970, the distribution had shifted to 16, 46, and 38 percent. In 1977, the distribution was 31, 48, and 21 percent.

DISTRIBUTION OF NET FARM INCOME BY SALES

Year:	All farms (billions)	\$100, 000 and over (percent)	\$20, 000 to \$99, 000 (percent)	Less than \$20, 000 (percent)
1960-----	\$11.1	6.4	27.6	65.9
1970-----	14.1	16.3	45.7	37.8
1976-----	21.1	34.0	45.9	20.0
1977-----	20.1	30.8	47.9	21.2
1978 ¹ -----	25.0	NA	NA	NA

¹ July 1978 forecast.

Off-farm income is increasingly important to farmers, especially to those in the lower sales classes. As a proportion of total income to farmers and their families, off-farm income increased from 43 percent in 1960 to 61 percent in 1977. Off-farm income is larger as a proportion of total income for small farms than for larger farms; it comprises over half of total income on farms with less than \$20,000 in sales. On many of these small farms, farming is a preferred way of life made possible by off-farm income. On others, it supplements farm income enabling the operator to become established in farming, but there are many small farmers with no or very small amounts of nonfarm income.

The source of this off-farm income varies across sizes of farms. On smaller farms, it usually is wages from nonfarm jobs, while rents, dividends, and interest are the important sources on larger farms.

ASSETS IN THE FARMING SECTOR

Assets were valued at \$709 billion in January 1978; they had increased nearly \$500 billion since 1960. Real estate is by far the largest component of farm assets (75 percent in 1978). Other physical assets comprise 20 percent and financial assets make up the remaining 5 percent.

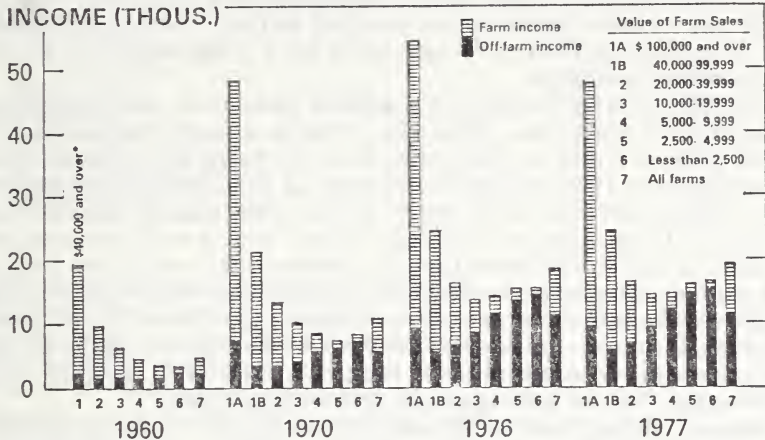
Real estate has also increased the most rapidly, an average of 16 percent per year between 1960 and 1978. The average annual increase for all assets was 13 percent during the period. Real estate, the only component to increase as a proportion of total assets from 1960 to 1978, accounted for 78 percent of the total increased value of farm assets. The rise slowed to 8.7 percent in 1977, half the annual 1970-77 average.

Farm assets are not as highly concentrated on large farms as are receipts. The largest 6 percent of the farms accounted for 28 percent of the sector's total assets, compared with over 52 percent of the receipts. Farms with less than \$20,000 sales had over a third of the total assets, but obtained only 10 percent of the receipts.

Farms in the \$100,000 and over sales class increased their share of all types of assets between 1970 and 1977. Shares held by the mid-size farms remained relatively stable, while those held by the smaller farms declined. Again, because of the distortion of inflation, comparison of assets held by each sales class in 1970 and 1977 overstates the increase of asset concentration.

OFF-FARM AND TOTAL INCOME PER FARM OPERATOR FAMILY

By Value of Sales Class, Selected Years



TOTAL ASSETS OF THE FARMING SECTOR, JAN. 1, SELECTED YEARS

	1960		1970		1977		1978 ¹	
	Value (billions)	Percent	Value (billions)	Percent	Value (billions)	Percent	Value (billions)	Percent
Real estate.....	\$137.2	65.3	\$215.8	68.5	\$483.8	73.9	\$525.8	74.2
Livestock and poultry.....	15.2	7.2	23.5	7.5	29.1	4.4	32.0	4.5
Machinery and motor vehicles.....	22.7	10.8	32.3	10.3	72.3	11.0	77.3	10.9
Stored crops.....	7.7	3.7	10.9	3.5	22.0	3.4	24.6	3.5
Household equipment and furniture.....	9.2	4.4	9.6	3.0	14.4	2.2	14.5	2.0
Financial instruments.....	18.1	8.6	22.8	7.2	33.2	5.1	34.6	4.9
Total ²	210.2	100.0	314.9	100.0	654.8	100.0	708.9	100.0

¹ Preliminary.

² Individual items may not add to totals due to rounding.

DISTRIBUTION OF FARM ASSETS BY VALUE OF SALES, 1970 AND 1977

Asset	Value of sales					
	\$100,000 and over (percent)		\$20,000 to \$100,000 (percent)		Less than \$20,000 (percent)	
	1970	1977	1970	1977	1970	1977
Real estate.....	15.1	27.2	35.3	37.6	49.6	35.2
Nonreal estate, physical.....	14.0	25.1	38.7	40.4	47.3	33.5
Financial.....	23.2	41.4	34.5	29.6	42.3	29.0
All.....	15.4	27.7	36.1	37.8	48.5	34.5

Inflation has been the major contributor to the increased value of farm assets, adding 96.7 percent of the \$54.1 billion increase in value between 1977 and 1978. In real terms, the value of farm assets was only 6.6 percent higher on January 1, 1978, than in 1960.

Value appreciation, particularly of land, produces significant capital gains in the farming sector. From 1971 to 1976, capital gains exceeded net farm income. In 1976, capital gains to farm operators averaged \$15,872 per farm; with income from all sources, the overall income and wealth gains per farm were \$34,670, compared to \$14,185 in 1970. The proportion of these capital gains accruing to farm operators increased from 65 percent in 1960 to 70 percent in 1976. The remainder accrued to nonfarmer landlords.

Operators of large farms own a smaller percent of their assets than do small farm operators. Thus, they receive a smaller share of total capital gains accruing to their sales class. Farmers with sales of \$100,000 and over in 1976 received 67 percent of the capital gains on farm assets, while operators of farms with less than \$2,500 sales received 85 percent. Capital gains, of course, do not add to cash incomes until the assets are sold. And, even though a farmer's net worth may increase from capital gains, serious cash flow problems may still be encountered in periods when production costs are increasing relative to farm product prices. Capital gains do alter the balance sheet (increase the sector's equity ratio) and thus provide security (collateral) against which farmers may borrow for expansion or other purposes.

Commercial agriculture in the United States requires extensive amounts of debt financing. Farm debt outstanding as of January 1, 1978, was \$120 billion, increasing at an average annual rate of nearly 16 percent during the 1970's.

FARM SECTOR LIABILITIES, JAN. 1, SELECTED YEARS

[In billions of dollars]

Liability	1960	1970	1977	1978 ¹
Real estate debt.....	12.1	29.2	56.6	64.2
Nonreal estate debt to:				
CCC.....	1.2	2.7	1.0	4.5
Other reporting institutions.....	6.7	15.8	37.8	42.7
Nonreporting creditors.....	4.8	5.3	7.3	8.3
Total debt.....	24.8	53.0	102.7	119.7
Proprietor's equities.....	185.4	261.9	552.1	589.2
Total.....	210.2	314.9	654.8	708.9

¹ Preliminary.

Proprietor's equities in farming and farm debt have increased at an average annual rate of 15.6 percent since 1970. In 1977, however, equities increased only 6.7 percent while total debt was up 16.6 percent.

Federal land banks, the Farmers Home Administration, life insurance companies, commercial banks, and individuals are the major holders of the farm real estate debt. The nonreal estate debt is largely held by commercial banks, production credit associations, the Farmers Home Administration, individuals, and the Commodity Credit Corporation.

DISTRIBUTION OF FARM DEBT BY SOURCE

[In percent]

Type and source	1970	1977	1978
Real estate debt:			
Federal land banks.....	22.9	32.6	33.4
Farmers Home Administration.....	7.8	6.6	6.2
Life insurance companies.....	19.6	13.1	13.6
Commercial banks.....	12.1	12.0	12.1
Individuals and others.....	37.5	35.8	34.7
Nonreal estate debt:			
Commercial banks.....	43.3	50.5	46.3
Production credit associations.....	18.9	26.6	24.3
Federal intermediate credit banks.....	.9	.8	.7
Farmers Home Administration.....	3.3	4.1	5.7
Individuals and others.....	22.4	15.8	14.9
Commodity Credit Corporation.....	11.2	2.2	8.1

Important features of the agricultural capital markets during the 1970's are the growth of Federal land banks over the entire period and the recent resurgence of life insurance companies as major lenders. Life insurance companies increased their holdings of farm real estate debt by 10 percent in 1976 and 17.6 percent in 1977, after being rather inactive in the farm lending business during the early 1970's.

The debt to asset ratio of the farming sector increased from 11.8 percent to 16.8 percent between 1960 and 1970. Since 1970, it has been stable at 16 to 17 percent. Larger farms have significantly higher debt to asset ratios than do small farms, largely because of their greater reliance on borrowed capital for production expenses and expansion.

SECTOR DEBT TO ASSET RATIOS BY SALES, CLASS, SELECTED YEARS

[In percent]

Sales	1970	1975	1977
\$100,000 and over.....	24.6	30.2	27.0
\$40,000 to \$100,000.....	21.4	15.4	15.0
\$20,000 to \$40,000.....	18.4	13.2	13.6
\$10,000 to \$20,000.....	17.0	10.6	11.0
\$5,000 to \$10,000.....	13.5	8.2	8.6
\$2,500 to \$5,000.....	8.6	5.5	5.8
Less than \$2,500.....	8.4	4.6	6.3
All farms.....	16.8	15.9	15.7

Farmers under 35 years of age generally have more debt than the average for all farmers, reflecting the large use of debt financing in becoming established. For 1976, approximately one quarter (14,000 loans) of the Federal land bank individual loans were made to young farmers for almost \$1 billion. This higher level of indebtedness makes young farmers more vulnerable to adverse production and price conditions.

Information on young farmers is very limited. Lending institutions are virtually the only source of data. According to information from the Farm Credit Administration, the typical young FLB farmer borrower in 1976 was 29 years old, operated 738 acres, had assets of \$355,000 with debts of \$147,000, had net farm income of \$27,000 and nonfarm income of \$20,000.

CHARACTERISTICS OF ALL BORROWERS COMPARED TO YOUNGER BORROWERS, 1976

Characteristics	All borrowers	Young borrowers
Of borrowers:		
Age (years).....	44	29
Assets (dollars).....	499,486	355,056
Debts (dollars).....	176,213	146,720
Net worth (dollars).....	323,273	208,336
Debt/asset ratio (percent).....	35	41
Debt/net worth ratio (percent).....	54	70
Net nonfarm income (dollars) ¹	23,382 (74)	20,133 (73)
Net farm income (dollars).....	30,643	26,691
Of farming operation:		
Acres farmed.....	908	738
Acres in security.....	295	235
Acres rented ¹	852 (44)	758 (47)
Acres other land owned ¹	455 (50)	360 (37)
Building value (dollars).....	36,641	31,955
Appraised value (dollars).....	143,243	112,058
Market value (dollars).....	150,259	116,365
Of loan:		
Loan amount.....	79,079	65,347
New money.....	63,593	55,455
Rate (percent).....	8.68	8.68
Terms (years).....	27	28
Loan/appraised value (percent).....	57	60
Loan/market value (percent).....	55	58

¹ Averages based on borrowers reporting attribute. Percent reporting shown in parentheses.

Source: Farm Credit Administration, "Characteristics of Federal Land Bank Loans, 1976." Statistical Bulletin 17, Washington, D.C. Research Division, FCA, November 1977.

RETURNS TO EQUITY IN FARMING SECTOR

The rate of return on equity capital in farming has traditionally been low, fluctuating between 3 and 4 percent during 1960 to 1977. The exception was the three atypical years 1972-74, when returns to equity reached 10 percent in 1973. The rate of return is considerably higher for large farms than for small farms. Although this is a widely accepted measure of economic well-being throughout the economy, detailed data by farm size, type, and other characteristics are not available on a continuing basis. Rates of return to equity capital by value of sales class and region are available for 1970.

RATE OF RETURN TO FARM EQUITY CAPITAL, UNITED STATES AND 10 REGIONS, 1970

Item	Sales class (in thousands of dollars)							All farms
	100 and over	40 to 100	20 to 40	10 to 20	5 to 10	2.5 to 5	Less than 2.5	
United States:								
Net returns to equity (percent).....	6.9	5.9	4.4	2.9	-0.1	-6.5	-6.1	2.1
Capital gains.....	3.9	3.7	3.5	3.4	3.3	3.2	3.3	3.5
Total.....	10.8	9.6	7.9	6.3	3.2	-3.3	-3.2	5.6
Region: ¹								
Northeast.....	7.6	6.4	4.5	.9	-2.3	-14.7	-10.8	.2
Lake States.....	9.1	8.4	8.1	5.7	-2.6	-11.2	-13.3	2.3
Corn Belt.....	6.3	6.1	4.8	3.0	-.2	-3.9	-10.0	2.6
Northern Plains.....	5.6	5.1	3.9	2.4	1.9	-7.3	-7.0	2.6
Appalachian.....	8.0	6.4	3.6	2.5	-2.0	-5.3	-2.0	.4
Southeast.....	10.7	7.1	2.1	-.3	-1.2	-9.4	-4.8	1.8
Delta States.....	11.9	9.7	5.7	2.3	1.5	-3.3	-2.7	4.5
Southern Plains.....	6.2	5.4	4.1	3.7	1.6	-4.8	-4.4	1.9
Mountain.....	8.6	5.4	4.2	3.3	1.9	-3.9	-5.1	3.2
Pacific.....	4.2	2.0	1.2	.2	-1.7	-10.9	-5.5	.8

¹ Does not include capital gains.

Source: Bruce Hottel and Robert Reinsel, "Returns to Equity Capital by Economic Class of Farm," Agricultural Economic Report No. 347, Washington, D.C.: Economic Research Service, U.S. Department of Agriculture, 1976.

TENURE

A major change in tenure has been the rise of the part owner who combines the security of an owned unit with the economies of size provided by rental units to obtain a viable operating unit.

FARM TENURE PATTERNS, UNITED STATES

[In percent]

Tenure	1940 ¹		1959 ¹		1974	
	Farms	Land in farms	Farms	Land in farms	Farms	Land in farms
Full owner.....	51.2	42.4	57.7	34.2	61.5	35.4
Part owner.....	10.1	28.2	21.9	49.7	27.2	52.6
Tenants.....	38.8	29.4	20.5	16.0	11.3	12.0

¹ Includes farms operated by managers.

Source: Census of Agriculture.

Farms operated by part owners have larger acreages than farms operated by full owners or tenants. The share of land in farms operated by part owners is considerably greater than the proportion of all farmers. Over half the land is now farmed by part owners while less than one-tenth of all land is farmed by full tenants.

In 1969, the owner farmed 6 of every 10 acres of land. Three-fourths of this owner-operated farmland was owned by individuals; the remainder by corporations and partnerships. Of the 376 million acres rented, 16 million acres were owned by corporations and 40 million acres were rented from farm operators.

LAND IN FARMS OWNED AND RENTED BY FARM OPERATORS, UNITED STATES

[In percent]

Year:	Owned	Rented farm	Land managed for others
		from nonfarmers	
1950.....	61.8	28.6	9.6
1954.....	62.3	28.6	9.1
1959.....	59.4	30.2	10.4
1964.....	58.0	31.3	10.7
1969.....	67.9	32.1	NA
1974.....	67.5	32.5	NA

Source: Census of Agriculture.

THE FARM LABOR FORCE

The farm work force decreased 58 percent between 1950 and 1977. This reflected technological innovation and increasing mechanization, along with the decline in the number of farms. Since 1950 the proportion of hired persons in the farm work force has trended upward. That is partly explained by the shift in composition to a higher proportion of young, seasonal workers, mostly students. Several of these would be required to make one full-time equivalent. The increase in student participation is underscored by the increase during the 1965-74 decade in the proportion of youth in the hired agricultural labor force. Workers under age 25 accounted for about 56 percent of the 1974 nonmigratory and 62 percent of the migratory labor force. By

comparison they accounted for less than one-fourth of the total civilian labor force.

The small hired labor force indicates that much of the farm work is still done by the operator and family. Only one-third of the farms reported use of hired labor, and the labor still averaged only \$5,600 per farm in 1974. Only 5 percent of agricultural employers had a payroll that exceeded \$20,000. This would approximate about 4 full-time employees. In California where the agriculture is labor intensive, only 22 percent of employers had payrolls over \$20,000. In Florida, the second major user of hired farm labor, 11 percent of the employers had payrolls over \$20,000. In short, the changing size and composition of the hired farm labor force do not suggest big changes in the family farm pattern of labor use.

FORM OF BUSINESS ORGANIZATION

Sole proprietorship or single-owner farms accounted for nearly 90 percent of the farms with sales of \$2,500 and over in 1974, but they contributed only 67 percent of farm sales. Corporations and partnerships, tending to be larger, contributed 18 and 14 percent of the total sales, respectively. Corporate farms, numbering 28,442, accounted for about 1 percent of all farms but for 11 percent of the land and 18 percent of the sales. Twenty-one percent of all farming corporations were located in California, Florida, and Texas. Farming corporations owned or rented an average of 3,377 acres per farm, six times the average for all commercial farms in 1974. Ninety-three percent of farm corporations reported 10 or fewer shareholders. The number of farms operated by corporations with 10 or fewer shareholders rose from 19,716 in 1969 to 25,677 in 1974, a 30-percent increase. Farms operated by corporations with more than 10 shareholders rose from 1,797 to 1,960, an 8-percent increase. Farm product sales from corporations with 10 or fewer shareholders doubled between 1969 and 1974, while the sales of corporations with more than 10 shareholders tripled.

NUMBER, ACRES, AND SALES OF FARMS BY FORM OF ORGANIZATION, UNITED STATES, 1974¹

Form of organization	Farms		Land in farms		Farm product sales	
	Number	Percent	1,000 acres	Percent	Million	Percent
Individual.....	1,517,787	89.5	678,738	74.9	\$54,294	67.4
Partnership.....	144,969	8.6	124,479	13.7	11,232	13.9
Corporations.....	28,442	1.7	96,125	10.6	14,648	18.2
Other ²	3,849	.2	6,298	.7	424	.5
Total.....	1,695,047	100.0	905,640	100.0	80,598	100.0

¹ Farms with sales of \$2,500 or more.

² Estates, Indian reservations, etc.

Source: 1974 Census of Agriculture, Special Survey of Corporations, preliminary.

In 1974, nearly a third of the corporations with 10 or more shareholders were in California, Florida, and Texas. These corporations tend to account for larger shares of fed cattle, selected fruits and vegetables, turkeys, nursery and greenhouse products and sugarcane.

Over three-fourths of the 28,442 corporations enumerated in 1974 were classified as family owned. Only 785 were publicly held. Family farm corporations are frequently operated like partnerships or single proprietorships and are formed to preserve the family farming opera-

tion by easing the transfer of assets among generations. Among corporations whose primary business is farming, family corporations continue to predominate. However, family corporations are much less prominent among those engaged in farming but receiving over half their receipts from nonfarm activities. The following tables present data on corporate farms by State and type of ownership.

FARMING CORPORATIONS IN THE UNITED STATES, 1974

Corporation	Farms		Land in farms		Product sale	
	Number	Percent	1,000 acres	Percent	Million dollars	Percent
Primary farm firms ¹	24,982	87.8	81,819	85.1	11,716	80.0
Privately held.....	24,820	87.3	81,208	84.5	10,923	74.6
Family.....	20,282	71.3	67,898	70.6	7,046	48.1
Other ²	4,538	16.0	13,310	13.9	3,882	26.5
Publicly held and other.....	162	.5	611	.6	783	5.4
Business-associated farm firms ³	3,460	12.2	14,305	14.9	2,932	20.0
Privately held.....	2,675	9.4	9,178	9.6	989	6.7
Family.....	1,476	5.2	2,810	2.9	296	2.0
Other ²	1,199	4.2	6,368	6.7	693	4.7
Publicly held and other.....	785	2.8	5,127	5.3	1,943	13.3

¹ 50 percent or more of corporate receipts from farming.

² Other includes independent and parent.

³ Less than 50 percent of corporate receipts from farming.

Source: 1974 Census of Agriculture, Special Survey of Corporations, preliminary.

CORPORATE FARMS, LAND IN FARMS, AND FARM PRODUCT SALES FOR CORPORATIONS WITH 10 OR FEWER AND MORE THAN 10 SHAREHOLDERS, BY STATES, 1974¹

States	Number of corporate farms		Land in farms (in thousands of acres)		Farm product sales (in millions of dollars)	
	1 to 10 shareholders	More than 10 shareholders	1 to 10 shareholders	More than 10 shareholders	1 to 10 shareholders	More than 10 shareholders
Maine.....	140	6	111.1	20.6	41.5	14.9
New Hampshire.....	56	2	19.2	.7	12.8	6.2
Vermont.....	71	5	38.6	2.4	11.5	.5
Massachusetts.....	272	22	56.8	15.4	51.0	19.6
Rhode Island.....	31	1	5.1	0	7.2	.1
Connecticut.....	154	19	29.9	12.7	28.7	28.3
New York.....	874	34	352.6	22.1	175.3	30.2
New Jersey.....	336	11	94.0	8.0	68.3	5.5
Pennsylvania.....	509	35	179.7	36.1	137.6	51.0
Ohio.....	679	52	255.8	21.5	139.6	29.4
Indiana.....	784	32	429.2	29.2	176.9	21.1
Illinois.....	476	52	311.2	100.5	123.1	41.1
Michigan.....	387	15	204.1	21.4	98.3	8.2
Wisconsin.....	786	69	531.7	116.8	140.5	62.6
Minnesota.....	675	46	549.9	55.7	206.9	31.5
Iowa.....	1,012	47	656.8	62.0	245.4	49.0
Missouri.....	717	33	689.3	42.9	113.9	26.6
North Dakota.....	62	4	129.3	9.8	12.2	3.4
South Dakota.....	426	14	2,219.4	43.7	113.2	21.5
Nebraska.....	1,116	40	3,923.5	490.0	562.0	132.7
Kansas.....	629	33	1,396.0	82.3	611.0	143.7
Delaware.....	77	4	75.3	2.7	45.8	6.6
Maryland.....	263	18	145.8	17.8	67.9	13.4
Virginia.....	382	28	302.4	60.9	97.7	14.7
West Virginia.....	66	6	47.8	1.9	9.2	2.6
North Carolina.....	525	54	326.8	73.9	134.4	44.0
South Carolina.....	220	12	232.4	26.2	46.7	8.1
Georgia.....	406	41	605.7	57.2	121.1	48.5
Florida.....	1,831	173	2,478.7	1,605.2	654.7	331.8
Kentucky.....	302	10	165.6	14.6	42.1	2.9
Tennessee.....	169	13	93.8	30.9	24.8	8.6

See footnotes at end of table.

CORPORATE FARMS, LAND IN FARMS, AND FARM PRODUCT SALES FOR CORPORATIONS WITH 10 OR FEWER AND MORE THAN 10 SHAREHOLDERS, BY STATES, 1974—Continued

States	Number of corporate farms		Land in farms (in thousands of acres)		Farm product sales (in millions of dollars)	
	1 to 10 shareholders	More than 10 shareholders	1 to 10 shareholders	More than 10 shareholders	1 to 10 shareholders	More than 10 shareholders
Alabama.....	220	22	251.4	39.4	72.1	26.2
Mississippi.....	460	31	827.9	85.8	120.8	52.7
Arkansas.....	564	44	857.3	63.1	162.3	65.3
Louisiana.....	376	64	550.4	308.1	110.2	67.8
Oklahoma.....	287	19	710.3	67.8	204.5	39.7
Texas.....	1,228	164	5,668.1	3,143.5	881.0	826.2
Montana.....	1,184	25	11,550.7	490.7	188.2	23.5
Idaho.....	664	23	2,079.0	84.1	261.0	19.8
Wyoming.....	528	20	8,881.8	968.6	77.3	4.4
Colorado.....	845	48	4,197.0	611.4	466.0	344.0
New Mexico.....	290	32	5,861.1	2,093.8	130.9	60.5
Arizona.....	364	63	3,349.9	2,324.5	461.4	156.2
Utah.....	293	17	1,738.8	116.4	53.7	8.7
Nevada.....	114	12	2,502.3	918.9	44.8	5.9
Washington.....	898	48	1,737.9	123.9	326.3	102.0
Oregon.....	574	38	2,389.4	533.0	189.4	45.2
California.....	2,228	303	3,989.6	1,463.3	1,904.2	721.1
Alaska.....	10	1	408.4	1.0	1.5	.2
Hawaii.....	117	55	296.2	873.4	41.0	494.8
U.S. total.....	25,677	1,906	74,517.9	17,415.2	10,022.9	4,277.6

¹ 805 corporations did not report the number of shareholders.

Source: 1974 Census of Agriculture, Special Survey of Corporations, preliminary.

There were 81,738 partnerships in 1976. They are especially numerous in Illinois, Iowa, Texas, and California. Three-fourths involved only two partners and one-sixth involved three partners. Only 838 partnerships were comprised of six or more parties. Non-related partnerships constituted only 7 percent of all farming partnerships and the vast majority of these were made up of only two partners. Nonrelated farm partnerships were most numerous in Indiana, Illinois, Missouri, Kentucky, Texas, and California.

VERTICAL COORDINATION

The farm sector today is increasingly dependent on the nonfarm economy to produce and market its products. This has provided the incentive for development and growth of close vertical ties between the farm sector, input suppliers, and food processors and distributors.

The proportion of total farm production under various forms of contracting and vertical integration increased from 19 percent in 1960 to 22 percent in 1970. Contract production increased from 15.1 to 17.2 percent and vertical integration (combining two or more stages of the production-marketing system within one firm) from 3.9 to 4.8 percent. Both contracting and vertical integration increased more in livestock products—especially fed cattle, eggs, and turkeys—than in crops. The following tables show the percentage of major crop and livestock commodities produced under vertical integration and contracts, and the methods used to coordinate the production of selected commodities.

Close coordination between the production, processing and marketing stages is essential for most perishable commodities. The economic risks involved in producing and marketing these commodities are greater than those for less perishable commodities such as grains. Perishable commodities are also unsuited to programs of the type operated for grains and cotton. Contracting and vertical integration are attempts to achieve stability, thus reducing the risk in the production and marketing of perishable commodities.

Formalized types of vertical coordination also appear to be conducive to large scale, highly specialized agriculture. Preliminary results of a recent survey of contract production, conducted jointly by ESCS and the Census Bureau, indicate that a large proportion of production contracts are held by farms in the larger sales classes.

PERCENT OF CONTRACTS BY GROSS VALUE OF PRODUCTS SOLD, UNITED STATES, 1977

Gross value of products sold	Commodity						
	Feeder and stocker cattle	Feeder pigs	Slaughter hogs	Broilers ¹	Eggs	Tomatoes	Potatoes
\$500,000 or more.....	6	1	9	4	10	24	13
\$100,000 to \$500,000.....	37	11	33	51	57	38	52
\$40,000 to \$100,000.....	28	30	44	34	28	20	27
\$10,000 to \$40,000.....	25	44	9	10	4	16	7
Less than \$10,000.....	4	14	5	0	1	2	1
Total.....	100	100	100	100	100	100	100

¹ Value of contract sales adjusted to represent farm value of broilers sold.

Source: 1977 Survey of Contract Production, preliminary.

Vertical coordination also influences the location of production. Large multiproduct firms are increasing their market share in the input, processing, and merchandising sectors. These regional and national firms are not dependent on any one area for farm produced raw materials. They obtain supplies in areas where they can get the volume, quality, and prices needed to support nationwide marketing programs. Consequently, their activities help determine location of production with the result that family farms producing for localized markets along with their associated input suppliers and marketing firms are placed at a competitive disadvantage.

Formalized methods of vertical coordination are transforming agricultural production into two sectors. Firms producing commodities such as broilers, fed cattle, and some vegetable crops are increasingly using techniques of production and coordination similar to industrial processes. In contrast, range cattle, grain, and most field crop producers retain conventional family farm styles of operation.

CROPS: ESTIMATED PERCENTAGE OF OUTPUT PRODUCED UNDER PRODUCTION CONTRACTS AND UNDER VERTICAL INTEGRATION, UNITED STATES, 1960 AND 1970

Crop	Production contracts		Vertical integration	
	1960	1970	1960	1970
Feed grains.....	0.1	0.1	0.4	0.5
Hay and forage.....	.3	.3	-----	-----
Food grains.....	1.0	2.0	.3	.5
Vegetables for fresh market.....	20.0	21.0	25.0	30.0
Vegetables for processing.....	67.0	85.0	8.0	10.0
Dry beans and peas.....	35.0	1.0	1.0	1.0
Potatoes.....	40.0	45.0	30.0	25.0
Citrus fruits.....	60.0	55.0	20.0	30.0
Other fruits and nuts.....	20.0	20.0	15.0	20.0
Sugar beets.....	98.0	98.0	2.0	2.0
Sugarcane.....	40.0	40.0	60.0	60.0
Other sugar crops.....	5.0	5.0	2.0	2.0
Cotton.....	5.0	11.0	3.0	1.0
Tobacco.....	2.0	2.0	2.0	2.0
Oil bearing crops.....	1.0	1.0	.4	.5
Seed crops.....	80.0	80.0	.3	.5
Miscellaneous crops.....	5.0	5.0	1.0	1.0
Total.....	8.6	9.5	4.3	4.8

Source: Ronald Mighell and William Hoofnagle. "Contract Production and Vertical Integration in Farming, 1960 and 1970." ERS-479. Washington, D.C. Economic Research Service, U.S. Department of Agriculture. April 1972, p. 4.

LIVESTOCK AND LIVESTOCK PRODUCTS AND TOTAL FARM OUTPUT: ESTIMATED PERCENTAGE OF OUTPUT PRODUCED UNDER PRODUCTION CONTRACTS AND UNDER VERTICAL INTEGRATION, UNITED STATES, 1960 AND 1970

Crop	Production contracts		Vertical integration	
	1960	1970	1960	1970
Fed cattle.....	10.0	18.0	3.0	4.0
Sheep and lambs.....	2.0	7.0	2.0	3.0
Hogs.....	.7	1.0	.7	1.0
Fluid-grade milk.....	95.0	95.0	3.0	3.0
Manufacturing-grade milk.....	25.0	25.0	2.0	1.0
Eggs.....	5.0	20.0	10.0	20.0
Broilers.....	93.0	90.0	5.0	7.0
Turkeys.....	30.0	42.0	4.0	12.0
Miscellaneous.....	3.0	3.0	1.0	1.0
Total livestock items.....	27.2	31.4	3.2	4.8
Total farm output, crops and livestock.....	15.1	17.2	3.9	4.8

Source: Ronald Mighell and William Hoofnagle. "Contract Production and Vertical Integration in Farming, 1960 and 1970." ERS-479. Washington, D.C.: Economic Research Service, U.S. Department of Agriculture, April 1972, p. 5.

METHODS OF COORDINATING PRODUCTION OF SELECTED AGRICULTURAL COMMODITIES, 1970

[Percent of production]

Commodity	Corporate				
	Vertical integration	Contracts			Open markets
		Individual producers	Producer bargaining associations	Producer cooperatives	
Sugar beets.....	2		98		
Sugarcane.....	60	23		17	
Fluid grade milk.....	3	15		80	2
Broilers.....	7	85		5	3
Processing vegetables.....	10	69	9	7	5
Citrus fruits.....	30	14	3	38	15
Turkeys.....	12	42		17	29
Potatoes.....	25	24	13	8	30
Deciduous fruits and nuts.....	20		8	30	42
Eggs.....	20	20		15	45
Fresh market vegetables.....	30	21		5	44

Includes producer bargaining associations.

Source: William Manley and Donn Reimund. "Interrelations in Our Food System." (Paper presented at 1973 National Outlook Conference). Washington, D.C.: Marketing Economics Division, ERS, U.S. Department of Agriculture, 1973, p. 6.

FORCES AFFECTING THE STRUCTURE OF FARMING

Like the nonfarm sectors of the economy, the farming sector is shaped by the interaction of economic, political, and technological forces. This section of the report discusses the factors instrumental in developing the structure of agriculture.

TECHNOLOGICAL ECONOMIES OF SIZE

One of the most important reasons behind the trend toward larger farming units is the economies of size, evidenced by lower unit costs of production that can be attained as farms become larger. Economies of size in producing farm products are closely associated with technological innovation. Innovations of both a biological or yield increasing, and of a mechanical or labor saving nature have increased the productivity and affected the structure of farming. Mechanical technology, however, has had the greatest structural impact, primarily because increased capacity of machinery and equipment has reduced labor requirements and enabled individual farmers to operate larger units.

MEASURES OF FARMING SECTOR PRODUCTIVITY, SELECTED YEARS

[1967 equals 100]

	Index of crop production per acre	Index of farm output per hour of labor	Index of total output per production input (productivity)
Year:			
1950.....	69	34	71
1960.....	89	65	90
1970.....	104	112	102
1975.....	112	144	115
1976.....	112	152	116

Most studies have generally concluded that the significant production economies are achieved by relatively modest sized farms. However, these studies are not recent and reflect the technology of the late 1950's.

Significant technological innovations during the past two decades altered the input mix and shifted the cost functions of production agriculture, generally in favor of larger farms. Examples are high capacity four-wheel drive tractors, center pivot irrigation systems, mechanical fruit and vegetable harvesters, and infrared aerial photography and computerized electronics for monitoring crop conditions. The capital requirements of these technologies preclude their adoption on small farms.

INDEXES OF TOTAL FARM INPUTS AND SELECTED INPUT SUBGROUPS, UNITED STATES, SELECTED YEARS
[1967 equals 100]

Year:	Total inputs			Farm labor	Mechanical power and machinery	Farm real estate	Agricultural chemicals
	All	Non-purchased	Purchased				
1950.....	104	150	70	217	84	105	29
1960.....	101	119	86	145	97	100	49
1970.....	99	96	102	90	100	98	115
1975.....	100	92	107	80	112	93	127
1976.....	101	90	113	78	113	94	141

The farming sector has traditionally operated on narrow profit margins. In 1975, for the sector as a whole, a farm with sales of over \$100,000 was required to earn a 5-percent return to equity after covering all fixed and variable costs, including operator labor and management. Smaller farms earned lower rates of return to equity. This combination of economies of size and low profit margins is a strong incentive for a farmer to achieve an operating unit large enough to earn an adequate return on the operator's investment.

PECUNIARY AND MARKET ECONOMIES

In addition to technical size economies, the structure is influenced by pecuniary and market economies. There are economies of size not directly related to the firm's technical production function. Examples are economies in the acquisition and utilization of information, the ability to obtain price premiums and volume discounts, access to product markets, and access to capital markets. Pecuniary and market economies affect farm size, location of production, and the degree of coordination with other sectors of the food system. These stem from transactions with input and product markets, financial institutions, and the transportation system.

Unfortunately, analytical knowledge of pecuniary and market economies is virtually nonexistent. The scant available evidence indicates that such economies have contributed importantly both to the growth of large-scale farms and contract and integrated production. These studies suggest that average costs continue to decline, even beyond the size at which technical economies are exhausted. Large-scale farms apparently achieve substantial economies unavailable to smaller farms in purchasing, product marketing, acquisition and utilization of information, and financial management.

LAND PRICE INCREASES

Increasing farmland prices have importantly affected the structure of the farming sector. By increasing initial capital requirements, they have been a barrier to entry into farming and have shifted the advantage in buying real estate to established farmers or others with financial capability to survive the initial investment period. The historical performance of land prices has increased the attractiveness to nonfarmers searching for inflation-hedge investments.

Farm real estate prices nationally have nearly tripled in the last 10 years. The rate increase, however, has been irregular. Regions with the highest rates are the Northeast, Corn Belt, and Appalachian, while the Pacific, Delta and Southern Plains regions have had the smallest increases. Price increases in 1977 were significantly less than for any year since 1972, reflecting the relatively low prices of many farm products.

INDEX OF FARM REAL ESTATE VALUE PER ACRE, UNITED STATES, 1968 TO 1978

	Index of value per acre (1967 equals 100)	Percent increase
Year:		
1968.....	107	-----
1971.....	122	14.0
1972.....	132	8.2
1973.....	150	13.6
1974.....	187	24.7
1975.....	213	13.9
1976.....	242	13.6
1977.....	283	16.9
1978.....	308	8.8

Over time, farmland prices are largely determined by the returns to farming. Because larger, well-established farmers earn a higher rate of return than do small farmers, they are able to pay more for the available land. Consequently, farmland prices reflect the rates of return that can be earned by the most efficient farms. Smaller, less efficient operators are thus at a disadvantage in competing for land.

Farmland prices are also often influenced by the potential for non-farm uses such as rural residences, subdivisions and commercial development. This, of course, reflects the role of land as an investment, rather than as an input for food production.

Only a small percentage of the farmland changes ownership each year and most of the land that is sold, about 90 percent for the last 2 years, remains in farming. Fifty-eight percent of farmland purchases in the last year were for farm enlargement, compared with the record 63 percent the previous year.

During the past year, individuals were net purchasers of farmland, privately held corporations and partnerships were net sellers. Publicly held corporations sold about the same amount of farmland as they bought. In the previous year individuals, partnerships, and public corporations were net sellers and private corporations net purchasers.

Purchase of farmland for residential housing is the most common competitive use with farming. In the past year, purchases of farmland for rural residential use were 10 percent of all purchases, 2 percent of the acreage, and 3 percent of the value. Use for subdivision accounted for 4 percent of purchases, 5 percent of acreage, and 5 percent of value. The average price per acre for tracts of less than 100 acres averaged at least twice the overall average price, reflecting the nonfarm competition for smaller tracts of land.

PERCENTAGE DISTRIBUTION OF FARM REAL ESTATE TRANSFERS BY INTENDED END USE, 1977 AND 1978¹

Land use	1977			1978		
	Purchases	Acres	Value	Purchases	Acres	Value
Agriculture only.....	80	91	90	81	90	89
Forestry.....	2	1	1	2	2	1
Mineral.....	(2)	(2)	(2)	(2)	(2)	(2)
Recreation.....	2	1	1	1	(2)	(2)
Rural residence.....	9	2	3	10	2	3
Subdivision.....	4	2	3	4	5	5
Commercial-industrial.....	1	(2)	1	1	(2)	1
Other.....	2	2	2	1	1	1

¹ Totals may not add to 100 due to rounding.² Less than 0.5 percent.

The large number of farmland transfers for rural residential use is consistent with the renewal of population growth in rural areas since 1970. In 1970, less than 20 percent of the rural population was counted as farm population. The increase of rural residences has important implications for the structure of agriculture. Many of these rural residents will enter the farm sector, at least statistically, by farming on a retirement, part-time, or hobby basis. By operating small, essentially noncommercial farms, they will earn low farm incomes and add to the "small farm" problem. In reality, most will have relatively high incomes. A major need is for data so we can distinguish between rural resident farmers and legitimate small farmers, who may indeed have low income problems.

IMPACTS OF INFLATION ON THE FARMING SECTOR

Inflation influences farm income and wealth by quickly and fully appearing in prices of goods and services purchased by farmers, while insignificantly increasing farm product prices in the short run. The result is a cost-price squeeze because farmers, unlike less competitive industries that have more control over product prices, have no immediate means to pass incurred cost increases to purchasers of their product. Beginning farmers and those with tenuous financial positions are especially vulnerable to inflation. Consequently, inflation also serves as a vehicle for weeding out less efficient farmers. Thus, the short-run effect of inflation is to reduce farm numbers and increase farm size.

Over the longer run, farmers are able to either restrict output, thereby raising farm prices and passing their own increased costs through the marketing system to consumers, or reduce costs by technology and increased size. In either case, the improved returns to farming become capitalized into farmland values. Increased land values lift the wealth and net equity position of farmers, and provide capital gains which may be used to finance farm expansion. As noted above, large efficient farmers with rates of return above the sector average can effectively bid land away from potential small farm purchasers. The long-run impact of inflation is thus to benefit the efficient, established farmers, serve as a barrier to new entrants, and to increase farm size.

Ultimately, inflation creates strong pressures for farmers to generate bargaining power and to become involved in administered or negotiated pricing arrangements to quickly pass higher costs on to the next level in the market chain. Thus does inflation become a factor

in the growth of contract and integrated production, as well as group action devices such as marketing orders and bargaining associations. Therefore, inflation may be viewed as leading toward more closely coordinated structure in agriculture.

FARM PRICES

Prices received by farmers for all commodities increased at about the same rate as all wholesale prices between 1960 and 1970, but they rose much more rapidly in the early 1970's. Through 1972, the ratio of prices received to paid for production inputs, a rough measure of the well-being of farmers, was relatively constant. In 1973 and 1974 the prices received to prices paid ratio was very favorable to farmers. From 1975 through 1977 the ratio of prices received to prices paid declined, as the increase in prices for farm products leveled off while input prices continued to rise.

INDEX NUMBERS OF PRICES RECEIVED BY FARMERS, PRICES PAID BY FARMERS FOR PRODUCTION ITEMS, WHOLESALE PRICE INDEX, AND RATIO OF PRICES RECEIVED TO PRICES PAID BY FARMERS, SELECTED YEARS

[1967 equals 100]

	Prices received			Prices paid for all production inputs	Wholesale price index	Ratio of prices received to prices paid
	Crops	Livestock and livestock products	All farm products			
Year:						
1960-----	99	92	95	92	94.9	1.03
1970-----	100	118	110	108	110.4	1.02
1971-----	108	118	113	113	113.9	1.00
1972-----	114	136	125	121	119.1	1.03
1973-----	175	183	179	146	134.7	1.22
1974-----	224	165	192	166	160.1	1.16
1975-----	201	172	185	183	174.9	1.01
1976-----	197	177	186	193	182.9	.96
1977-----	192	175	183	200	194.2	.91

Changes in the ratio of prices received to prices paid, by affecting net farm returns, become capitalized into the value of farmland. Consequently, farm product prices at artificially high levels provide windfall increases in wealth to farmers and other owners of farmland, which stimulates the search for land to add to their holdings even at inflated prices. But high product prices also increase net returns to smaller farmers, and slows the rate of decrease in farm numbers.

Over time, however, as higher priced land is rented for more, and as new farmers begin where old ones leave these high land values are incorporated into the cost structure, and rates of return to farming fall. High land prices increase the competitive advantage of established farmers and well-capitalized investors in the land market, thus encouraging the growth of larger farms.

Alternatively, low farm prices relative to production costs would result in lower current farm incomes and reduced wealth and equity positions for farmers. Well-established farmers with sufficient equity and savings could endure such low farm prices for an extended period. However, farmers with low equity ratios and those in otherwise weak financial positions could be forced to quit farming or seek other sources of supplementary income. Thus, the short-run effect of low farm prices is to speed up the exodus of low equity farmers and discourage potential new farmers. Their farm assets would likely wind up in the hands

of established, financially strong farmers and land speculators who would then hold the land in expectation of future capital gains. In the longer run, lower land prices would lower the cost structure of succeeding farmers.

IMPACT OF RISK AND INSTABILITY

Instability in agriculture arises from both natural and "manmade" sources. Natural instability reflects weather, diseases, insects, etc. (affecting yields) and consequently alters output and prices. Earlier, when farming was largely for subsistence and supply of local markets, farmers' welfare was largely determined by localized weather conditions. Today, however, farming serves national and international markets, and weather conditions around the world affect commodity prices and farm welfare.

Classic examples of manmade instability are the herd-population cycles for cattle and hogs. This type of instability arises because farmers must base their production decisions on expectations of what prices will be at the end of a production period. For some commodities such as cattle and orchard crops, this may be several years.

The internationalization of agricultural markets add to "manmade" instability by introducing the influence of political and economic conditions in foreign markets. This affects foreign demand for U.S. farm products and supplies of key inputs such as petroleum and some fertilizer ingredients for example. The increasing dependence on foreign markets for both product sales and input supplies has increased the level of risk and instability inherent in agriculture. Regardless of source, instability influences the structure of farming by reducing production efficiency. Production decisions must be made concerning not only the economically efficient level of inputs and outputs, but also the appropriate mix of each—more fertilizer and less pesticides for example, and more soybeans and less corn. These decisions, however, are based on expectations; yields and prices are known with certainty only at the time of harvest or later. Only by chance are the initial decisions the most efficient as exact knowledge of prices would allow.

Most economists once thought that small farms were less vulnerable to instability than large farms, and that instability was a deterrent to the growth of large-scale corporate type farming units. However, because the largest farms are concentrated in high-risk types of farming, such as cattle feeding and vegetable production, and the more stable types of farming, such as feed grain and wheat production, largely remain the domain of smaller family farmers, the validity of the conventional wisdom is questioned.

One argument is that large farms are able to develop institutional arrangements and risk management strategies that enable them to reduce risk or partially shift it to others in the production-marketing system. Study of structural change in the cattle feeding, broiler, and processing vegetable subsectors suggests that the efforts of producers and marketing firms to deal with risk are primary reasons for the growth of large scale, highly coordinated production units. Nevertheless, too little is known about the comparative abilities and willingness of family and large scale farms to cope with risk and instability, the risk management strategies that are used by various sizes and types of farms, or the structural impacts of these strategies.

CREDIT INSTITUTIONS

The major source of capital for agriculture between 1870 and 1950 was generated internally via saving and reinvestment. The current situation is quite different. Technological innovations, specialization, and industrialization are changing the relative value, optimum mix, and quantity of resources and inputs required for efficient production units. Most of the changes have required increased capital. The total investment in farm production is expanding faster than equity capital is generated from farm earnings and depreciation. As a result, the farm sector is increasingly dependent on outside investment capital.

These increasing capital needs have largely been supplied by general credit institutions (commercial banks, insurance companies), and specialized credit institutions serving the agricultural sector (Federal land banks, production credit associations, and the Farmers Home Administration). By providing necessary investment and operating funds, these institutions have encouraged growth in farm size and the rapid technological advances of the past two decades. To a lesser, but still significant extent, credit institutions have been a factor in the growth of closer vertical ties between the production and marketing sectors for some commodities. This results because lenders are reluctant to make operating loans for open market or speculative production of risky commodities, but are more likely to accept production contracts as loan collateral.

Only the Farmers Home Administration is oriented specifically to serving the credit needs of farmers with limited resources. This agency is a leading institutional source of real estate loan funds for young farmers with small farm sales. In 1970 the FmHA held 22 percent of the real estate debt of farmers under age 35 with less than \$10,000 of farm sales. It held 18 percent of the real estate debt of young farmers with farm sales between \$10,000 and \$40,000. A major impact of the FmHA has been to provide a means of entry for young farmers who would otherwise have been financially inadequate.

TAX POLICIES

The tax system has been an important mechanism of agricultural policy. Traditionally, the Congress has evidenced a concern with the potential effects of tax legislation on agriculture, and has frequently included special treatment for agriculture.

The cumulative effect of special exemptions and alternatives has apparently meant reduced tax liabilities for individuals with farm income. There is mounting evidence, however, that these benefits are not distributed in proportion to tax liabilities, and the actual consequences of these provisions may be quite different from those intended. The largest tax savings apparently accrue to the largest farms and to individuals investing in agriculture to take advantage of the special provisions. This results, of course, because tax savings are only beneficial to individuals who have tax liabilities in the first place, and that advantage grows as the marginal tax rate increases.

It thus appears that congressional efforts to protect the family and small sized farm through the tax system may have been somewhat self-defeating, largely because of the difficulties in limiting the benefits of special tax preferences to the intended group. The provisions are so broadly written as to invite abuse, or so narrowly defined that they provide little actual assistance.

ENVIRONMENTAL AND OTHER REGULATIONS

The proliferation of public regulation in recent years has also affected the farming sector. Environmental, worker health and safety, and food quality and safety regulations have multiplied.

Environmental regulations from Federal, State or local authorities are imposed to prevent the environment, primarily water and air quality, from deterioration resulting from farming practices. The structural impacts of these regulations have not been fully assessed. In general, however, they raise production costs. To the extent that there are economies of size in complying with the regulations, the growth of large-scale production units will be further encouraged. For example, guidelines relating water quality standards to animal wastes or to runoff crop production entail the installation of disposal and control systems that require rather large fixed capital outlays of a nonproductive nature. These may well prove prohibitive to smaller farms, or at least will increase the relative advantage of their larger competitors. Exempting small farms from the standards may enhance their competitive position. Farms too large to be exempted, but too small to attain size economies, may well suffer the greatest burdens. This category includes a large number of medium-sized family farms.

Regulations to protect farm worker health and safety relate primarily to housing standards for migrant workers, pesticide injury, and the safety of machinery and equipment. Compliance with standards for housing and machinery are capital increasing, while avoidance of risks of pesticide injury to workers may entail changing cultural practices in some commodities. The structural implications of these regulations are not clear, but they will apparently require sophisticated managerial ability, in which large farms have a distinct advantage.

Regulations relating to food wholesomeness and quality will likely increase the involvement in farming activities of food processors and marketers. These regulations affect the farming sector by imposing standards on the levels of pesticide and other chemical residues that may be contained in the food products. Consequently, a strong incentive exists for processors and marketers to increase their control over the way agricultural commodities are produced.

STRUCTURAL IMPACTS OF FARM COMMODITY PROGRAMS

The individual and cumulative structural impacts of commodity provisions in the Food and Agriculture Act of 1977 are not well known. Some provisions of the act likely impact in a direct and immediate fashion, while others are more indirect, subtle and longer term. Better understanding of how the various provisions affect the structure of agriculture; the competitive position of family farms, and whether these eventual impacts are consistent with the intent of the Congress would represent a research agenda in and of itself.

Payment limitations were built into the 1973 and 1977 farm acts to tilt the benefits of commodity support programs toward small and moderate-size farms. The 1973 act contained a \$20,000 payment limitation, but because of market conditions no such payments were made and thus the payment limitation had no effect. Under the 1977 act the payment limitations of \$40,000 for 1978, \$45,000 for 1979, and

\$50,000 for 1980 and 1981 are high enough that very few farms will be affected by them, even if market prices drop to loan levels and thereby maximize deficiency payments. For the few very large farms affected by the limitation, firm organization could be altered if producers attempt to devise means to circumvent the limit. If successful, payments would not effectively be limited, and perhaps alternative means of achieving the limitation objective should be explored.

Another possibility is that payment limitations cause large farms to shift to commodities not subject to the limitations or refuse to comply with program provisions. To the extent that large farms shift to other commodities, this could lead to a situation of concentration of the very large farms in locations and commodities not affected, whereas the so-called basic commodities covered by the limitations would tend to be produced by family sized farms. To the extent that large farms do not comply with the program, the effectiveness of the program is reduced.

The payment limitations do raise a question of equity among producers of different commodities. The limitations apply only to deficiency and land diversion payments and not to loans. If target prices of, say, corn and wheat are set to cover equal proportions of costs of production but the loan rates for the two commodities are not set proportional to target prices, the producer of the commodity with the highest relative loan rate is implicitly offered more price and income support (as a proportion of unit cost of production) *not subject* to the limitation. Thus, for the commodity having the higher relative loan rate, the program favors larger farms. In regions where producers have a choice between such commodities the program could lead to a shift to the favored commodity to permit further growth in farm sizes under the umbrella of Federal price protection.

Under the 1977 act *national average costs of production* for individual crops are used as the basis for establishing target prices. Determining the potential longer run impacts of this provision involves a determination of how the benefits of the commodity programs are distributed and the implications of that distribution for structural change. If large firms are the relatively low-cost producers, the target prices will allow these producers to secure profits relative to the smaller, higher cost producers.

If this is true, the large producers would be expected to capitalize the difference between their cost of production and the target price (or market price, if higher), thus bidding up the price of production assets namely land. It then would become more difficult for new producers to enter and more difficult to raise the capital required to secure the production assets (land) needed to have a viable operation. The long-term trend toward fewer and larger farms would be continued, as resources of the existing farmers would be assumed by present, larger than average producers rather than new ones.

The 1977 act provides that program compliance and benefit disbursement are to be based upon current plantings rather than one acreage allotments determined from plantings in a historical base period. In addition to correcting other inequities, the elimination of historical allotments removed one incentive for consolidating farms into larger units. The old allotment system encouraged farmers to purchase additional farms or land having allotments and to consolidate those allotments onto their most productive land and thus qualify

for more Government benefits. For the major crops, there now is reduced incentive for combining farms in order to combine or shift allotments.

The central features of the current farm commodity programs are those provisions designed to minimize risks, protect farm income, and reduce the extremes in farm and food prices. These provisions include market price supports (loan rates), income support (target prices and deficiency payments), natural disaster protection, and reserves. A net result of these provisions is to keep price fluctuations within a band bounded on the lower end by loan rates and on the upper end by CCC owned reserve release prices. These provisions reduce potential income fluctuations, but natural disasters remain as another major source of income instability. The 1977 act extended for 2 years the payments program that was initiated in the 1973 Farm Act, to provide deficiency payments based on target prices for preventing planting and low yields caused by natural disasters. Thus through the target price deficiency payments program, the grain reserve program, and the disaster (or subsidized insurance) programs, society has collectively assumed a significant proportion of the risk from both economic and natural disasters to farmers producing commodities covered by the programs. This risk protection could have significant longer term structural implications. Both economic and natural disaster protection affect the availability of capital (borrowing capacity), the rate of farmer exit (hence entry), the minimum rates of return to equity capital, efficient resource allocation and so on. The cumulative impacts of these provisions over the long term are not entirely clear and need to be researched further. However, past studies have tended to indicate that reduced risk encourages farm consolidation to increase volume and efficiency. Thus, the provisions of the 1977 Farm Act may contribute indirectly to the intensification of capital, the further consolidation of farm operating units, and the exodus of farm labor and farm families.

Present farm programs, including research, continue to result in economic efficiency gains which ultimately transfers to consumer savings for food. We have not clearly identified the implied tradeoffs with other social goals, an issue that deserves research attention.

PUBLIC RESEARCH, EDUCATION, AND TECHNICAL ASSISTANCE PROGRAMS

Research, education, and technical assistance programs of the U.S. Department of Agriculture land-grant university system were major contributors to the over three-fourths increase in agriculture's productivity in the last 25 years. This publicly supported system has sponsored the vast majority of the basic research and a significant portion of the applied developmental research that led to the mechanical and biological innovations that were adopted by the farming sector over the period. In addition, the education and technical assistance programs of the cooperative USDA land-grant university extension services and the USDA Soil Conservation Service have been a major cause of the rapid adoption of these innovations by farmers. These technological innovations, especially those resulting in reduced labor requirements, have had a major impact on the structure of farming by permitting increased economies of size and capital requirements.

Publicly supported agricultural research, education, and technical assistance programs are primarily aimed toward increasing the productivity of the farming sector, although in recent years there has been increased emphasis on programs concerned with environmental quality, worker safety and energy conservation. These programs have had a greater impact in holding food costs down than they have had in raising farm incomes. This is because the competitive structure of the farm sector puts farmers in the position of being price takers and forces them to pass any cost reductions through the marketing system. Thus consumers, rather than farmers, have been the primary beneficiaries of publicly supported agricultural research, education, and technical assistance programs.

Even so, there is a great incentive for farmers to adopt cost reducing technology. Early adopters receive profits before farm prices fall as many farmers adopt the technology and increase output. Late adopters incur losses as farm prices fall below their production costs. In effect, the farm sector finds itself on a technological treadmill, fueled largely by public funds. Nevertheless, these developments have made possible the enormous capacity and productivity of today's American agriculture, thus assuring the Nation's consumers plentiful supplies of food at relatively low real costs while making it possible at the same time to be a major supplier of food to the rest of the world.



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